

# Inside the Pega DX Architecture

We power digital transformation. Here's how.

A PEGA  
WHITEPAPER



Build  
for  
Change<sup>®</sup>

## Executive summary

The software industry has a history of promising momentous transformation... and then failing to deliver. Too often, enterprises end up focusing on a shiny new object – implementing a chatbot, deploying robotic process automation (RPA) – that may solve a tactical need, but misses the mark on long-term digital transformation.

In fact, we've found that enterprises often make three well-intentioned mistakes when chasing the digital transformation (or DX) dream:

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- 1 They focus on channels rather than journeys, reinforcing the disconnected customer experiences they are seeking to avoid.
  - 2 They attempt to automate tasks, rather than automating the outcomes customers and employees are looking for.
  - 3 They maintain traditional silos – front-office vs. back office, business vs. IT – and miss building the end-to-end experiences that cut across organizational boundaries.
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Pega offers our clients more than just a vision of digital transformation. We offer a proven path to turn that vision into reality. We don't sell a cartoonish promise of "no software." We love software. We understand how hard it is to get enterprise software right. And for over 35 years, we've shown our clients that you can get it right, and that the results you can achieve are well worth the effort.

The **Pega DX Architecture™** is the foundation of how we help you deliver those results.

## When it comes to digital transformation, architecture matters

Most enterprises weren't designed for the digital world. Their systems and organizations were built in silos to optimize particular operational functions, such as investigations or payments. New silos pop up as organizations deploy channel-specific apps, acquire other businesses, or purchase cloud software that doesn't connect to the rest of the enterprise. These silos kill efficiency and create gaps in customer experiences. Meanwhile, employees suffer because they are the ones manually filling the holes.

When enterprises duplicate data across systems, they create maintenance headaches and reporting nightmares. Much of their core processing, even fancy new "big data" analytics, happens in batch, making it hard to respond in real time. Business logic – the rules and processes that define how an organization functions and competes – is buried in code. This logic can only be accessed, read, or changed by the "high priests of IT" who understand the syntax of code and can guess the intent of the original programmer.

The challenges grow exponentially for an enterprise that has a global presence, runs multiple lines of business, sells multiple products, or serves multiple customer segments. These organizations must achieve consistency across key processes and services and exploit efficiencies of scale through reuse. Yet they must also allow for variations in how the software behaves driven by regional regulation, cultural considerations, and the need to tailor experiences to a particular customer or product.

This leads to a choice between the lesser of two evils: either create a massive amount of IT complexity to allow for the variation required to maximize profitability and customer satisfaction; or simplify products, rules, and processes to streamline implementation and risk making unprofitable decisions for the sake of simplicity.

### How to rise to the challenge

To fuel real transformation, enterprise software must be secure, capable of protecting the sensitive data of an organization and its customers. It must be scalable, able to support hundreds of thousands of users and millions of transactions. It must be reliable in support of mission critical operations.

Your software must be beautifully designed and perform well enough to satisfy an increasingly demanding user. It must connect to other systems, even those that don't have modern Application Programming Interfaces (APIs). It must deliver on the promise of the cloud to deliver speed and simplicity, while upholding the security, flexibility, and data access needs of the enterprise. And most of all, enterprise software must be designed for change.

Of course, lasting digital transformation takes more than tech – it takes leadership, vision, execution, and discipline across an organization. But we believe technology should always enhance and enable your transformation, not stand in the way.

That's what the Pega DX Architecture™ is all about.

## The Pega DX Architecture

Deliver business value

Use our industry-leading technology to deliver real, functional benefits.



### Real-time, omni-channel AI

provides a customer engagement “brain” that works across touchpoints to recommend the next best action at every interaction.



### End-to-end robotic automation

powers processes and journeys that smash through silos, connecting customers and employees to the outcomes they need.

Start fast and scale

Get value fast without losing the ability to scale and grow as your business demands.



### Journey-centric, rapid delivery

yields rapid results and limitless scalability by tackling meaningful customer and employee experiences.



### Situational Layer Cake™

untangles complexity with a patented architecture that lets you focus on the differences you need for each product, region, or channel, while reusing the rest.

Future-proof your investment

Stay ahead of disruption and keep pace with rapid change.



### Software That Writes Your Software®

allows business and IT to co-design and co-develop smart, secure apps using visual tools.



### Cloud choice

gives you the power to run your applications however and wherever you want, with no restrictions on use or future flexibility.



Pega DX Architecture

## Real-time, omni-channel AI

Pega's proven AI drives real-time decisions that deliver awesome engagement on any channel, improving experiences for over 1.5 billion customers across the globe. We ensure that each and every conversation delivers the next best action – exactly the right message, the right offer, and the right level of service, instantly. You provide a great experience while maximizing the customer's value to your organization.

We do this by crunching millions of data points instantly and determining exactly the best way to engage with that customer in that moment. It could mean making an offer. Or initiating a retention plan. Or placing a digital ad. Or predicting a problem and offering a resolution. It could be as simple as recommending that a front-office employee wish the customer a happy birthday.

### AI that's all about experiences, not channels

We know that you need to go everywhere your customers go, so Pega AI works across all channels to provide a consistent experience, whether in a store, on the phone, on the web, or in a mobile app. Our AI integrates seamlessly with existing CRM apps, analytics platforms, and data tools. It connects to streams like mobile locations or network events to detect patterns that inform truly personalized engagement.

This is AI created by businesspeople – not developers or scientists – using visual decision strategies. These strategies combine predictive analytics (algorithms developed through mining large sets of data), adaptive analytics (machine-learning algorithms that improve with each interaction), and traditional business rules that allow users to prioritize and arbitrate between decisions.

What does that mean? It means you can look across all potential outcomes to deliver the best action for growing customer value. And it means that any change in the customer's context – a click, a reply, a new location, a tweet – will trigger a new next best action. In other words, it's as real-time as you can get.

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### Success story: Sprint

In just 90 days, telecom provider Sprint deployed Pega's real-time, omni-channel AI across 1,000 service agents, ensuring the right retention offers were available for each customer. Sprint saw a 40% increase in Net Promoter Score, an 800% increase in customer upgrades to higher value plans, and a 50% reduction in post-paid churn – resulting in the lowest churn level in company history. Read more about it [here](#).

**“ Pega has the brains to help an agent deliver the right treatment to the right customer at the right time.”**

-Marcelo Claure

CEO





Pega DX Architecture

## End-to-end robotic automation

Only Pega brings together industry-leading robotic and process automation in a single, unified platform. Pega Robotic Automation™ delivers a fluid and dynamic digital workforce that can work autonomously – automating processes en masse – and “co-bots” that work alongside human employees, handling mundane tasks so your people can focus higher-level work. With Pega you can mix and match use cases in one technology platform, even using robots to discover new automation possibilities via Pega Workforce Intelligence™.

### The secret to operational excellence? Case management.

Done right, robotic automation gets results – but it’s only the beginning. To avoid chaos and manage work from end to end, you need the power to orchestrate bots, processes, and human tasks using case management.

The “case” is the heart of Pega’s end-to-end approach to automation. Cases are outcome-driven: they represent work to be done, like a customer inquiry that must be resolved or a new account to be opened. Businesspeople define a case in Pega by laying out its stages or milestones in a simple visual designer. You add steps to each stage, building the framework for your processes and establishing a common language without getting buried in detail. The case becomes a canvas on which business and IT can collaborate.

Using the case approach, you can:

- Manage the multiple processes, automated robots, and human tasks needed to achieve a customer or business outcome.
- Simplify data management, deciding when and how to retrieve and update data in external systems, and even dispatching bots to do so
- Automate service levels, prioritization and escalation – and make sure you keep your promises to your customer.
- Capture audit data and history, so you always have visibility and transparency into what’s going on behind the scenes.

Pega cases are powered by AI, using machine learning and natural language processing to continuously optimize and find new opportunities for automation. This isn’t just robotic task automation or process management. Pega automates outcomes so you can deliver the frictionless experiences your customers demand at the speed your business needs.

### Success story: Cisco

Powered by Pega’s end-to-end automation, Cisco Systems took an outcome-at-a-time approach to improving operations. Business and IT worked together to automate key functions like order processing and fulfillment.

By embedding Pega directly into their Salesforce.com system, Cisco eliminated the manual work that users were doing in Salesforce, reducing cost by a factor of four and eliminating 93% of manual touches. Not only was this a huge efficiency improvement, it eliminated two million hours of wait time, improving the customer experience. [Get the full story here.](#)

**“We keep discovering how we can push the envelope. And so far, we’ve not found a limit to that boundary of how far Pega can take us.”**

-Steve Power  
Senior Director, Order Management Services





## Journey-centric rapid delivery

To deliver on the promise of digital transformation – and stay ahead of disruption – you know you need to move quickly. But you also need a strategy that drives transformation across the full scope of your business. How do you combine both speed and scale?

Too often businesses obsess over front-end experiences, replacing a call center desktop or deploying a channel-specific app. Or they start by focusing on the back end, trying to overhaul massive, fragmented data systems and deploying task-centric robots. Neither of these strategies deliver the results businesses need. The front-end approach might be faster – and sexier – but only addresses a small part of the customer experience. The back-end approach is painfully slow and never reaches the customer.

### Focus on the (customer) journey, not the destination

Pega built our future-proof technology so you can pursue transformation one journey at a time. You use a design thinking approach to redesign your customer experience – your journey – from end to end.

These journeys bring together the interactions and processes you need to achieve an outcome – and not just any outcome, but one that is meaningful to your customer. Signing up for new a utility service is a journey; so is disputing the fraudulent activity on your account after having your wallet stolen; so is updating an insurance policy to reflect your changing family. Journeys stretch end to end across your enterprise, from the moment a customer engages to the time the work is completed and the promise fulfilled.

Instead of ripping and replacing systems, you can embed a new journey into your existing systems – your website, your mobile apps, even Salesforce and other CRM tools – using Pega Mashup and APIs. Pega software easily wraps around your existing back-end systems, and it's architected so that the details of system integration don't creep into and overwhelm your business logic.

Focusing on journeys means rolling out solutions quickly, while adopting an end-to-end mindset. Thinking holistically. Acting locally. And, ultimately, transforming your business the smart way, so you're able to keep up with the pace of change in the market and avoid creating new silos.



## Situational Layer Cake

Most enterprises sell multiple products and operate across multiple channels, serving different types of customers. Not only does each product have its own set of rules, but those rules change in different regions and countries. All of this adds up to big-time complexity, which is why you need software that can handle every aspect of your business.

Unfortunately, most application platforms are one-dimensional, meaning you're forced to choose between two not-so-great options when moving beyond the first phase of a project:

- Create a copy of your application for each product, region, or channel and end up maintaining changes in multiple places, or
- Try and cram everything into a single common practice, and lose the ability to differentiate your products, satisfy local regulations, or deliver a tailored experience.

Either way, simplistic systems only make things more complex in the long run.

### Software built for the scale and complexity you need

Often, an organization will say they have 100 different processes, when they really have three or four unique processes and lots of small variations. Pega designed our patented architecture, Situational Layer Cake™, to manage the complexities of those variations.

Everything built in Pega – processes, rules, AI, data models, user interfaces – is organized into layers, so you can roll out new products, regions, or channels without copying or recoding. You declare what is different, and only what is different, in layers that match each dimension of your business. Independently versioned layers let you pilot new innovations by deploying changes to select users and scaling easily from first project to transformational program. Commonalities across dimensions are automatically reused, speeding change and ensuring consistency. The Situational Layer Cake maintains previous versions, so you can roll back instantly and show auditors exactly how the application behaved in the past.

No other application platform allows for this kind of reuse and specialization. Only Pega empowers complex organizations to get results fast, at scale.

### Success story: AIG

This multinational insurer needed a common backbone to link claims systems divided into silos. The goal: simplify these systems, bringing in responsiveness while allowing products to remain as localized as possible.

With the OneClaim™ application, powered by Pega's Situational Layer Cake, AIG consolidated 55 claims systems across 60 countries into one global system, meeting locally specific needs and requirements while creating a common process compliant with corporate policies. Beyond the IT benefits of reduced maintenance and improved reuse, OneClaim also drove significant business benefits, including improved agent experience and 20-30% shorter cycle times for high-frequency claims.

**“ The Situational Layer Cake is the backbone of our strategy [for] building our systems.”**

-Eric Martinez  
Executive Vice President, Claims and Operations







## Software that Writes Your Software®

Traditional software development is broken. It's slow. It's expensive. It fails to deliver.

Why? Because even with the most up-to-date agile approaches, businesspeople are still forced to write down what they want the app to do so that programmers can manually write the code needed to execute. Instead of breaking down silos, this widens the gap between business and IT. It's hard to collaborate, hard to innovate, and really hard to make changes.

### **This is way beyond low-code. This is no-code.**

With Pega, engineers don't code apps – business and IT design software together using groundbreaking visual tools. Forget requirements docs or spec sheets that never stay in sync. You capture everything – business goals, processes, UI, integration, security – directly in Pega's visual models.

Once you design it, Pega automatically generates the software. Tunes the software. Documents the software. Future-proofs the software. Automatically implements that fancy JavaScript library your UX guru is rambling on about. You can see the impact of changes instantly, even while your app is running. Pega can even generate application documentation automatically – and it always reflects what the application actually does.

No wonder Pega lets you build and change your application 12X faster than coding.<sup>1</sup> We even provide built-in tools for managing your agile projects, delivering continuously with DevOps and optimizing your app with AI-powered monitoring.

Of course, model-driven development is not unique to Pega. Other vendors market “low-code” or “rapid development” tools. But these tools quickly run out of runway. What is unique is the breadth, scope, and scale of Pega's capabilities. We've built our flagship technology, the Pega Platform™, to be unified, complete, and enterprise-grade. The Pega Platform empowers organizations to build and deploy complete, robust, mission-critical enterprise applications without code. And we make it easy to make changes, so you can always stay a step ahead.

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<sup>1</sup> “Census Enterprise Data Collection and Processing: COTS Capability Assessment and Analysis,” U.S. Census Bureau, 2016.



Pega DX Architecture

## Cloud choice

Cloud architecture supports faster time to market, increased operational efficiency, and better customer engagement – making it essential for digital transformation.

But cloud isn't "one size fits all," and different enterprises have different needs. To get speed, you give up flexibility. To get ease, you give up control. You code around governors built to protect the vendor's business – not yours.

Software as a service (SaaS) companies protect their annual renewals by making it difficult (or sometimes impossible) to migrate away from their platform, to the point where the switching cost isn't worth the effort and risk. You might start fast, only to find your app won't scale to meet the security and data demands of the enterprise.

### Your cloud, your way

Pega delivers cloud choice, so you have the flexibility to build the model that works for you.

For the fastest ROI, choose Pega Cloud. We built our cloud for the enterprise, from the ground up, using virtual private cloud (VPC) instances for protection and control, and automated operations designed by Pega experts to exploit Pega's no-code advantage. With Pega Cloud, you get:

- Reliable service certified by independent auditors
- 24x7 concierge service with global reach and regional dedication
- Industry-leading security and separation between Pega environments and your data

We do the heavy lifting, so you can focus on building and configuring applications that become your competitive advantage.

But you have other choices too. For maximum control and connectivity, deploy on a private cloud you manage and keep your applications close to your existing systems. Or, if you have existing partnerships with AWS, Microsoft Azure, or the Google Cloud Platform, deploy on their clouds. The key is that you keep full control of your infrastructure, allowing you to run selected applications completely behind a firewall, while still taking advantage of the elasticity, virtualization, and DevOps benefits that come with a cloud architecture.

Whatever you choose – Pega Cloud, your cloud, or a partner's cloud – you aren't locked in. Mix and match or move between options, while preserving the flexibility and agility you need to compete and win today and tomorrow.

Real cloud choice isn't a luxury. It's a necessity. With Pega, you get both the speed and ease you want and the control and security you need.

## The power of a unified solution

Be afraid of companies that have acquired their way to greatness. These “Frankenstacks” – and “Frankenclouds,” who try to hide their complexity behind the cloud – make you wire disparate pieces together. They are brittle, unable to scale, and so complicated that change becomes impossible.

At Pega, we’re obsessed with being unified. Our products and features work together seamlessly “out of the box” because we built them to work together. When we’ve acquired new technology, we’ve rewritten the software to run within our unified engine. The Pega DX Architecture is core to the Pega Platform™, which is the foundation of everything we do – from delivering one-to-one customer engagement powered by real-time AI; to making proactive, digital service work across all channels; to optimizing your business from end to end with digital process automation.

Our unified approach doesn’t mean Pega’s technology is monolithic. Individual functions or services built on Pega can be isolated and run on separate infrastructure nodes, supporting microservices architectures when appropriate. Nor does being unified mean sacrificing “best of breed” technology, from mobile and business process management to case management, decisioning, and CRM.

Bringing all of these industry-leading capabilities together in a unified platform empowers our clients to achieve revolutionary results. Because when you don’t have to waste time feeding the Frankenstack, you can focus on stuff that matters: Improving customer value at every interaction. Designing awesome service experiences that delight customers. Automating into the far corners of your business. Operating at the speed and scale you need.

Achieving that – *all* of that – is essential to fulfilling the promise of digital transformation.

**Learn  
more**

To see the Pega DX Architecture in action,  
watch our whiteboard videos: [pega.com/whiteboard](https://www.pega.com/whiteboard)



We are Pegasystems, the leader in software for customer engagement and operational excellence. Our adaptive, cloud-architected software – built on the unified Pega Platform™ – empowers people to rapidly deploy and easily change applications to meet strategic business needs. Over our 35-year history, we've delivered award-winning capabilities in CRM and digital process automation (DPA), powered by advanced artificial intelligence and robotic automation, to help the world's leading brands achieve breakthrough business results.

For more information, please visit us at [www.pegacom](http://www.pegacom)